The Agricultural College

EXTENSION BULLETIN

VOLUME II SEPTEMBER, 1906 NUMBER 1

THE SELECTION OF SEED CORN

By C. G. WILLIAMS, Agronomist, Ohio Experiment Station, Wooster

THE SCHOOL LIBRARY

By A. B. GRAHAM

"What is home without a mother?"
Just a home devoid of joy.
Want a motto? Here's another:
"What's a farm without a boy?"

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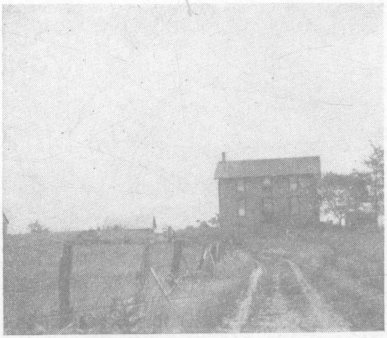
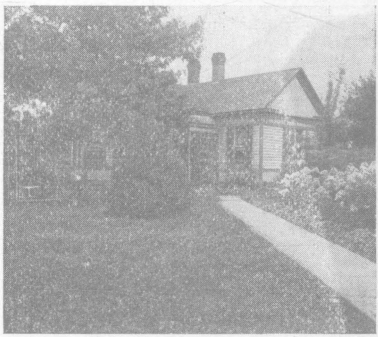
A PLACE TO EXIST



A PLACE TO STAY



A PLACE TO LIVE

SEPTEMBER

The golden rod is yellow,
The corn is turning brown,
The trees in apple orchards
With fruit are bending down.

The gentian's bluest fringes
Are curling in the sun,
In dusky pods the milkweed
Its hidden silk has spun.

The sedges flaunt their harvest
In every meadow nook,
And asters by the broodside
Make asters in the brook.

From dewy lanes at morning
The grapes' sweet odors rise.
At noon the roads all flutter
With golden butterflies.

By all these lovely tokens
September days are here,
With summer's best of weather
And autumn's best of cheer.

—*Helen Hunt Jackson.*

THE SELECTION OF SEED CORN

By C. G. WILLIAMS

Agronomist, Ohio Experiment Station, Wooster

Some of our common farm crops are propagated by buds, others by seeds. The potato is an example of the former; wheat, oats and corn are examples of the latter. Of the plants we propagate by seed some are self pollinated, as wheat and oats; others are cross pollinated, as corn. Self pollinated plants come very true to the variety year after year. They will not "mix" when planted close together. Cross-pollinated plants and especially wind pollinated plants like corn will mix unless planted many rods apart, the wind blowing the very fine pollen grains from the tassel of one corn plant to the silks of another plant. It is necessary then to keep different varieties of corn widely separated if we would keep them distinct and pure.

This mixing of corn renders quite difficult the process of improving corn by the selection of especially desirable plants and ears. It has not been found practical to isolate a single desirable corn plant, or the progeny of a single plant, for the purpose of establishing certain desired characters. The in-breeding (self or close pollination) thus made necessary is contrary to the nature of the corn plant.

For centuries and centuries corn has been adapting itself to Nature's method of cross-pollination, and those corn plants which have most thoroughly adapted themselves to this method Nature has selected for perpetuation. We shall accordingly succeed in improving our corn as we fix in mind certain characters which have been found by experiment to be desirable, and select a number of plants which conform to this desired type, growing the seeds from these plants where they will not become mixed as a result of pollen from other varieties, or types coming in contact with them.

What are desirable characters in the corn plant?

MATURITY

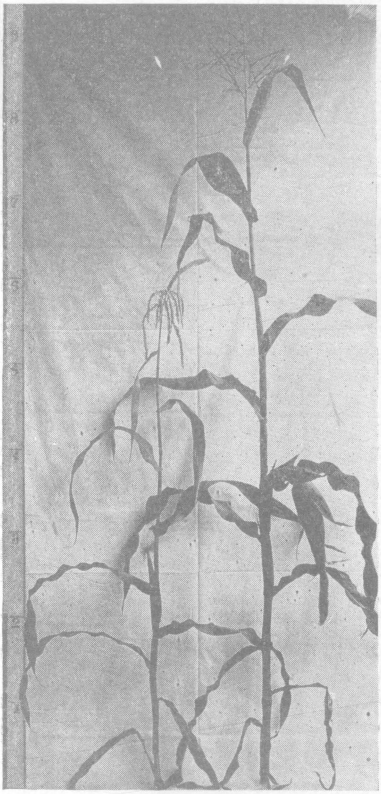
What farm boy is not familiar with soft corn—corn which had not ripened when the killing frosts of the middle, or last of September came? While the farmer can use a little of such corn, it is not nearly so valuable as that which thoroughly matures before the frosts come. In the selection of ears of corn for seed it is important that only such ears be selected as have acquired the habit of ripening in time. Care should be taken not to select seed ears from plants or varieties that ripen a long time before hard frosts may be expected, for such plants and varieties will yield less corn than those which use the entire season.

Varieties which are a little too late may be made to ripen earlier by selecting ears from the earliest maturing plants.

VIGOR

I think that what we might group under the word vigor, is perhaps deserving of our second consideration. Every one will be able to distinguish a vigorous plant from one lacking in vigor. The former will be noted for large circumference of stalk at the base, gradually tapering

toward the top; for well developed brace roots, holding it in upright position; for a large leaf development ("The more leaves a plant has the more solar energy it can transform into plant tissue."*); for freedom from disease.



VIGOR vs. WEAKNESS
Two plants each of which grew in a hill with two other plants. Soil conditions quite uniform

WEIGHT OF EAR

While we have good reason to expect that the vigorous plant will produce an ear of corn of good weight, this must be determined, not assumed. Occasionally vigorous plants are barren; frequently they produce inferior ears. The weight of the ear is of great importance.

Yield of shelled corn per acre is, and probably always will be the principal aim of the corn grower. To attain this end he should select seed from the plants most capable of producing shelled corn per acre. In order to estimate in the slightest degree the capabilities of corn plants growing in the field, careful attention must be given to the environment under which the plant is produced. Plants are what they are as a result of two forces, heredity and environment.

Very many, if not most productive plants, owe their superiority to immediate environment—extra food, sunlight and moisture as a result of thin stand. Possibly four of every five ears of seed corn as ordinarily selected from the wagon or cribs, owe their excellence to this lack of competition. Some plants possess superior ability in the way of producing large ears as a result of heredity. Such plants can only be determined with certainty by means of what is known as the ear-row test. This test consists in comparing the relative productiveness of a number of ears of corn planted side by side an ear (or a part of an ear) to a row. The reader is recommended to use this test.

However, the intelligent selection of seed corn in the field as maturity approaches is helpful if it take into consideration the immediate environment, particularly the stand of plants. A plant growing in a hill with two other plants should be rated much higher for having produced an ear of a given weight than a plant growing in a hill by itself, soil conditions being the same.

In other words, the selection of seed corn should be made in the

* Prof. Goff in *Principles of Plant Culture.*

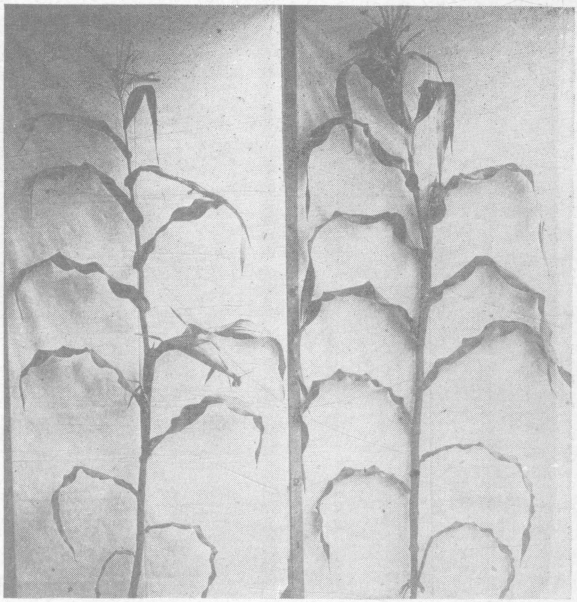
field where the growing plants may be considered in connection with their environment and plants growing under less than normal stand or under extra-normal conditions of any sort should thereby be disqualified save in exceptional cases. We want to be as sure as possible that the excellence we observe is due to something wrapped up in the seed and not to something which has happened to the seed, for if we fail to make the same things happen our excellence will disappear.

Weight of ear, when selected as indicated above, is much more significant than shape of ear, indicating, as it does, the productive ability of the mother plant. The same may be said of the importance of weight of ear as compared with the covering of the extremities—tips and butts—straightness of rows or even length and circumference of ear. However, length of ear is worthy of attention. Of two ears of equal weight, but differing in length and circumference, our experiments thus far show that a premium should be placed upon length. Our experiments have also shown that the total weight of ear is a slightly better indication of the productive ability of a seed ear than the weight of shelled corn. The percent of grain has not proved especially important.

The final weight of ear should be determined after it has become thoroughly air dry.

POSITION OF EAR

In the selection of mother plants the position of the ear on the stalk should be noted and extremes avoided. Ears borne too high tend to pull the plants over as maturity approaches. They are also difficult to gather in standing corn. The selection of extremely low ears will tend to reduce the size of the plant, shorten the season of growth unduly and hence decrease the yield. Other things being equal it is of advantage that the ear point downward at the tip.



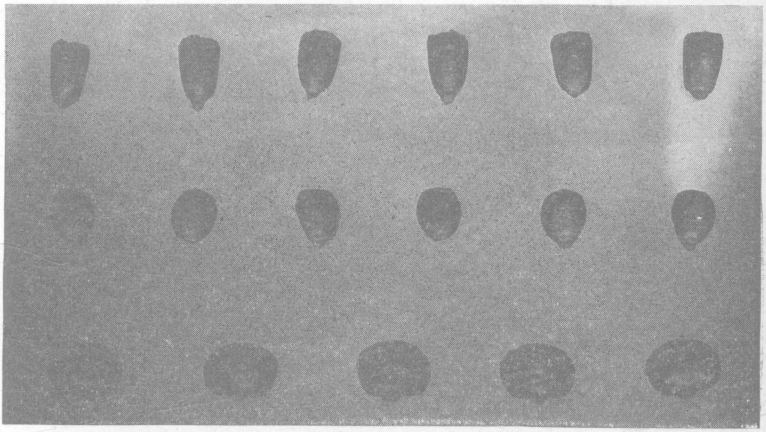
POSITION OF EAR
Ear about right

POSITION OF EAR
Ear too high

A larger number of ears than are needed should be selected in the field that later culling may leave the necessary amount of seed. It is well to leave the seed ears on the stalk until they are well matured and hardened. Plants bearing the selected ears may be marked by topping, or otherwise, that they may be noted and the ears saved at husking time.

In the final going over of the air-dry ears the kernels should receive careful inspection. Good length of kernels when associated with good sized cobs results in large yields per acre, but length of kernel at the expense of diameter of cob does not give maximum yields. While length of kernel is desirable, if it consists mainly of a prolonged chaffy cap it is of little moment and may well be rejected.

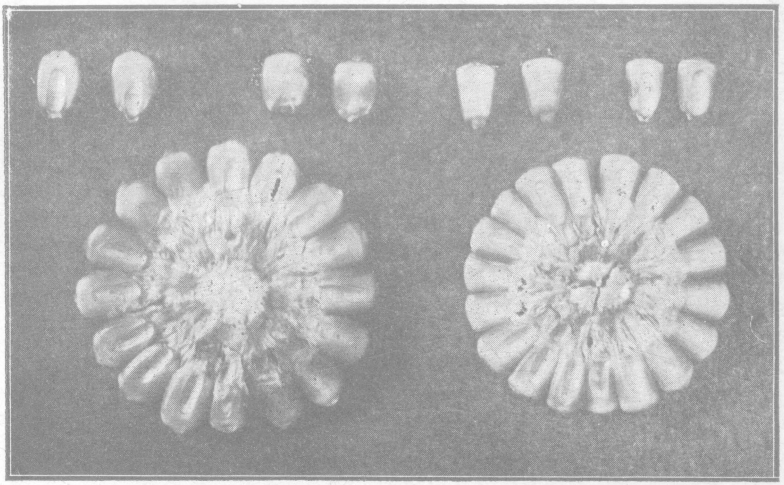
The shape of the kernel should be such that the rows of kernels fit snugly together their full length. This means that they should gradually decrease in breadth from the crown to the tip, with edges straight. The kernel should not, however, come to a sharp point at the tip, but should have good breadth and thickness else the size of the germ will be restricted. It should be remembered that the germ is the most valuable part of the kernel from the standpoint of nutrition, and is the home of the embryo plant. Thin, shrunken, sharp-pointed kernels are quite objectionable.



Upper row quite desirable Middle row very unsatisfactory Lower row typical flint kernel

Attention has been called to the fact that heredity and environment are responsible for what we see as we look over a field of corn with its hundreds of thousands of individual plants, no two of which possess the same characters, the same possibilities. The work of the corn grower, young or old, is to determine that which is temporary—accidental—and that which is hereditary. It is hoped that the suggestions* here offered, hinting at some few things which are characteristic of choice mother plants, will aid the reader in locating some of the many plants in all corn fields which are above the average. Having found plants which possess inherent value, the law of heredity, which has been described as the" biological law by which living beings tend to repeat themselves in their descendants," will enable one to gradually raise his yield of corn year by year. This work of selection and testing must be continued, the better ever being chosen from the good, and while the superlative may never be attained it will not be because advancement is not made, but because our ideal of the possible is always in advance of the actual.

*The writer realizes that the suggestions offered are meagre. This work is comparatively new. Investigations of moment are in progress. It is hoped that each year will add to our stock of information.

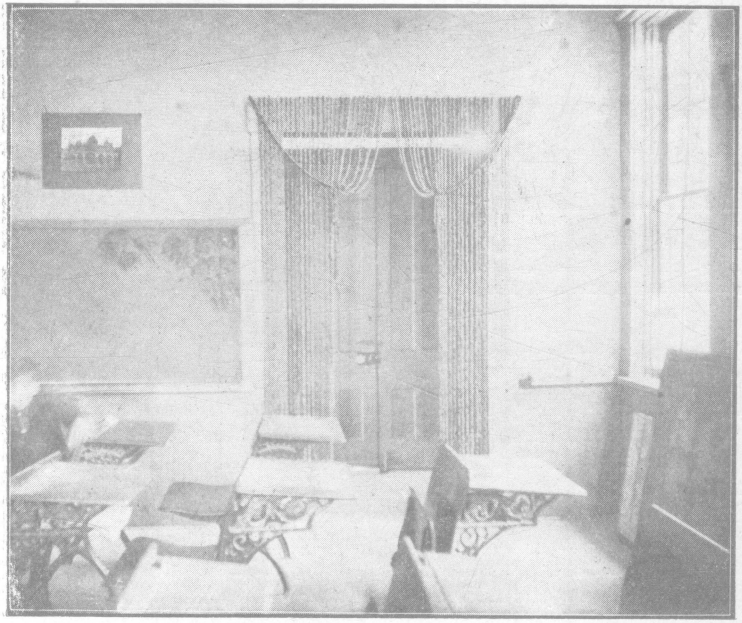


GRAINS SOMEWHAT ROUND GRAINS WEDGE-SHAPED

Which will yield greatest number of pounds of shelled corn per acre, if ears are of same size?

Corn raised by the Washington Township (Franklin Co.) Agricultural Club. Exhibition made at school, February 22d, 1906

The boy who raised this corn reads about selecting seed, tillage and cultivation of seed corn. He attends high school where Agriculture is taught.



A suitable decoration for a country school. A portiere made of strings of red and yellow corn. This portiere has been at this door nearly two years

THE SCHOOL LIBRARY

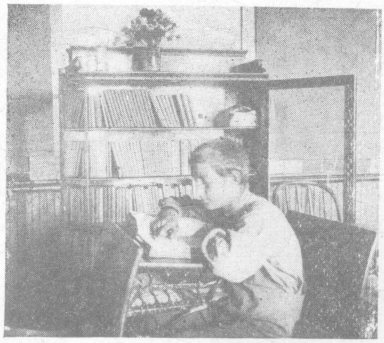
By A. B. GRAHAM

The school library is as necessary as desks, blackboards, and text books.

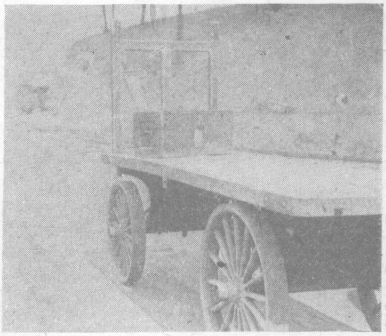
"Let the boys and girls learn what is in the text book," means little, if their text book is the only book they have to read. The story or description given by another writer may assist in getting a new or more complete meaning of what is in the text book.

To be assisted to think the thoughts of our best writers enobles, purifies, and inspires. It is the right of every child to have an opportunity to come into relationship with the lives of our best men and women.

Children of the middle and upper grades want what appears to them as real; they want literature that contains characters that are full of life. The old time—and sometimes the present day—goody-good story contains nothing to arouse the admiration or sympathy of boys and girls.



A pleasant corner in a country school
A library of two hundred volumes and a case purchased by the Board of Education



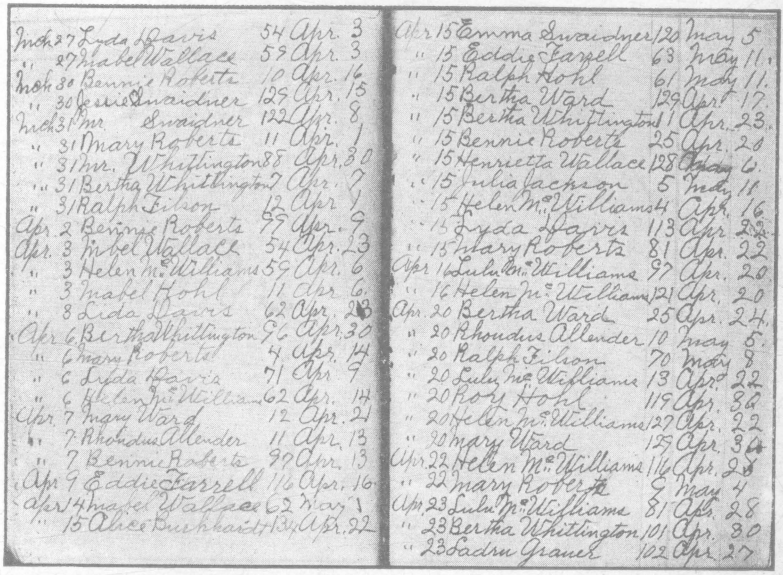
A box of forty books on its way from the State Library to a district school. The Board of Education pays express charges both ways

When the cry comes from the young child for something to read, don't offer him a copy of Dombey and Son, Lady of the Lake, or Rawlin's Ancient History. They are good, and are offered many times because they are good. But let us pause a moment and ask ourselves if they are good for children. They may be enjoyed by a few children, but this few will not need to be offered such books; they will seek them.

Many a child might have lived more of life had not the home library consisted of only an agricultural report, a congressman's speech, and an almanac. It matters not what newspapers are taken, a taste for the best reading is not to be acquired from them. The best books are not to be purchased from the bargain counters at from nineteen to forty-nine

cents. Much money has been spent for bargain counter books to fill up shelves. The number of books on shelves never made a library. There may be dust laden gilt-edged books, but of what account are they? Use, not abuse, indicates a library or reading habit. Reading good books makes good impressions; good impressions produce right action and proper living.

What boy or what girl has not become better from reading such books as "A Man Without a Country," "The Birds' Christmas Carol," "King of the Golden River," Dickens' "Little Nell," "The Old Fashioned Girl," "Life of Abraham Lincoln," and "Washington and His Country."



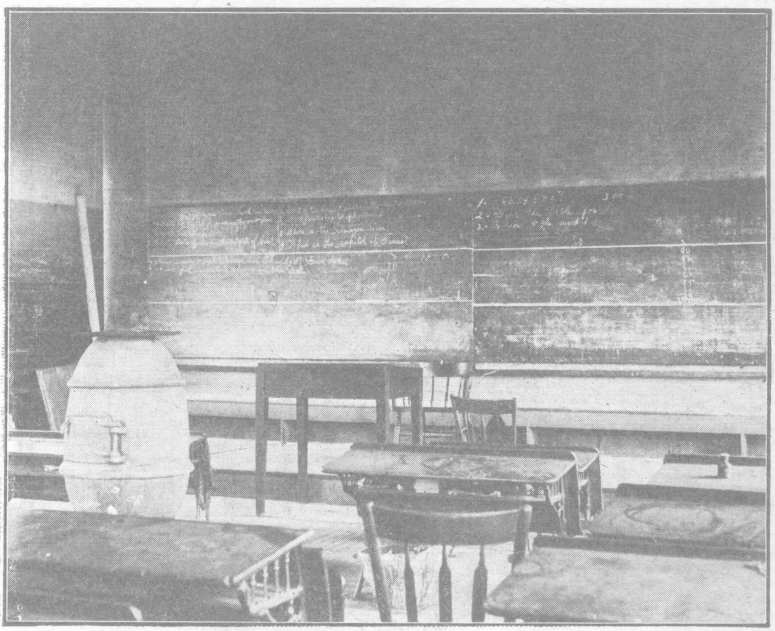
A Library Record as it is required to be kept by a Board of Education of a western Ohio township. This township has thirteen sub-district libraries

But how can the best books come into our schools? First, Sec. 3998–6 of the Ohio School Laws permits township, special, and village boards to spend two hundred and fifty dollars each year for libraries. Second, socials, lecture courses and entertainments may be given to raise funds for the local library. Third, the State Library will send to each school in a township a box containing from thirty to forty books; the books cost only the express charges both ways. Write the State Librarian, Columbus, Ohio.

The library in the school will start the library in the home.

Beautify the Country School House

Why should children be compelled to be surrounded with bare walls not always completely covered with plastering? Why should most of their wakeful hours during the school year be spent where a red rusted stove and the festoons of cobwebs, the checked and scaled blackboard, and the intense sunshine through an unshaded window are the only things to break the monotony of the brush streaked whitewashed walls?



Not a window shade or picture. Three ten-inch painted boards for a blackboard. This is in a fair farming district where the people wonder why a boy wants to quit the country school

If the walls are to be whitewashed, the white should be more impressive than the streaks. If they are to be papered, the paper should be of such colors that the room will appear bright and airy, not dark and dingy. If frescoes, paints, or papers are used, reds, dark greens, orange, or dark yellows should be used sparingly; the lighter grays, greens, and yellows are less tiring to the eyes. Varnish in paint for walls or ceiling produces a shiny effect which at a glance appeals to one as adding to the beauty, but the reflection of light from it proves very wearying to the eyes.

Seldom is the wood work or window cleaned, although motions have been gone through. Soap and muscle help, but it takes a detecting eye as well, to make a real clean school house.

A few well selected pictures, not color medleys, help to make the surroundings cheerful, homelike, and inviting.

The interior of a country school. Pictures, slate blackboard, papered walls, and a book-case filled with books that children will read. This is one of thirteen such school rooms in this township. Public sentiment is right. Agriculture is taught here.

NATURE WORK

BASED ON THE READING LESSONS

There being a great variety of readers in use in the schools of our state, one can do little more than make a few selections from texts most commonly found in the rural schools.

The following from "In Times Swing" by Lucy Larcom may be suggestive: "Wait—one lilac bud I saw." In what month does the lilac bloom?

"In a blur the violets pass." Do the lilacs bloom before violets? By what other name are violets known by children?

"May-flower's breath and insect's hum." What insects' hum may be heard in May?

"Roses carpeting the ground." During what month must this be?

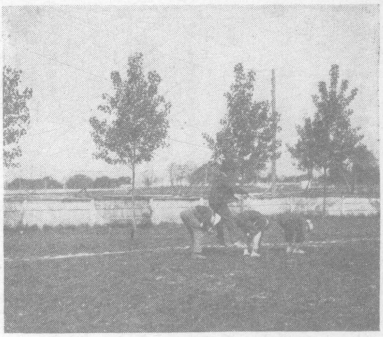
"Thrushes, orioles, warbling sound." Do you know each of these birds? Where does each build its nest?

"Cardinal blossoms burn like fire." Look in low damp places in July and August.

"The golden rod flashes from the dark green sod." If you know golden rod, see if you can find two kinds. What beetle is commonly found on it?

"October weaves rainbows of the forest leaves." What tree has leaves which turn many colors in autumn?

"Gentians fringed like eyes of blue, Glimmer out of sleety dew." Where are they fringed? Where are they found growing? What is their color?



Health-giving games played on the country school ground

On the country school ground the first month of school.

More pleasures for the country boy. The reward of a Saturday holiday

"Winds through withered sedges hiss." Where may sedges be found? Look at the stem. How many sides has it? What a peculiar knotty topped grass!

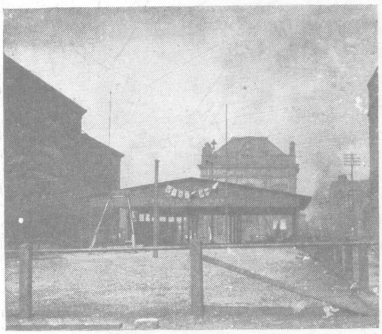
Have the plants been named in the order in which they come in the season? Did the golden rod begin to grow about the time the violet and oriole were with us? Are the violets here now? Are the thrushes, orioles, and swallows here now?

BASED ON THE FIELD, SCHOOL YARD, AND GARDEN TRIPS

Pick the large green worm (larva) from the tomato and put it in a glass can half-filled with soft but not damp dirt. Don't forget to feed it well with fresh tomato leaves. Wait and see what it does?

Place a large tobacco worm in a cigar box. Feed it on fresh tobacco leaves. If you are patient it will show you a new world. Wait while it is taking a long winter nap and with the return of the warm spring days a beautifully colored moth will appear.

Don't forget the woolly ague worm or "woolly bear" as it is sometimes called. It has a lesson for you. It is worth while to observe the striped green worm that eats the milk weed or the one that eats the wild parsnip and the wild carrot. If you find one with what appears to be little white eggs upon it, do not knock them off. By and by they tell you their story.



A play ground in a large city. A smoky sky. Not a blade of grass

Blue sky, sunshine, clear water, and beautiful trees—what more could be desired

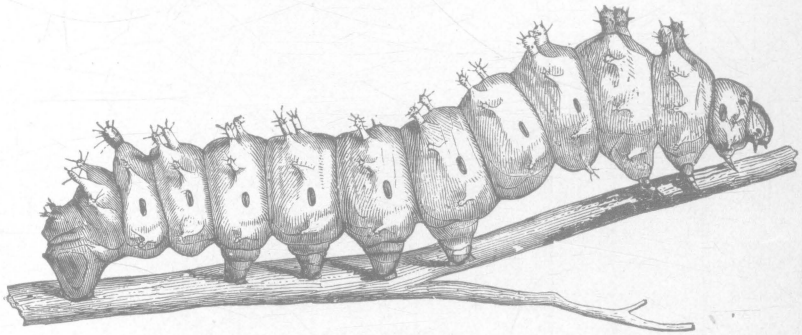
Keep an eye open for cocoons this fall. Look on twigs and under fence rails.

The harvest moon will soon give us many beautiful autumn evenings.

"And now with autumn's moonlit eyes
Its harvest time has come.
We pluck away the frosted leaves,
And bear the treasure home."

What is meant by the sun "crossing the line?"

The Department of Agricultural Extension will be pleased to identify plants and insects for teachers and children.



The larva of the Cecropia Moth—Let it tell you its history.

THOSE EVENING BELLS.

TOM MOORE. S C HANSON.